

ABSTRACT OF THE DISCLOSURE

A spark gap device that is formed in an integrated circuit (IC). The IC has a dielectric substrate upon which a high-voltage switch is disposed. The switch includes an anode element and a cathode element separated from each other by a spark gap. A trigger electrode is disposed on the substrate material in the spark gap. A capacitor is electrically coupled to the trigger electrode. The cathode and anode elements and the trigger electrode preferably are at least partially covered with a dielectric material. When the capacitor is charged, the charge on the capacitor exerts a strong electric field on the cathode and anode elements that causes ions to migrate in the cathode and anode elements toward the spark gap. When the trigger electrode is excited by an electrical current, the ions arc across the gap and a conductive path is created between the cathode element and the anode element.